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In re Application of: Thomas A. Figura et al. § Group Art Unit: 2825
§
§
§ Examiner: Calvin Lee
Serial No: 09/471,460 §
§ Atty. Docket: 94-0280.03
Filed: December 22, 1999 §
§
For: USE OF A PLASMA SOURCE TO FORM §
A LAYER DURING THE FORMATION §
OF A SEMICONDUCTOR DEVICE §

APPLICANTS' BRIEF ON APPEAL

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3/23/05

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APPLICANTS' BRIEF ON APPEAL

I. REAL PARTY IN INTEREST

The Applicants, Thomas Figura, Kevin Donohoe, and Thomas Dunbar, have assigned their interest in this application to Micron Technology, Inc.

II. RELATED APPEALS AND INTERFERENCES

During prosecution of the current application, Applicants filed an Appeal Brief on 1/20/03 that addresses an issue the Examiner attempted to reassert in the Final Office Action dated 10/20/04. (*See* part VII(B) below.) The Examiner reopened prosecution in response. There are no other appeals or interferences known to the Applicants or the assignee which may directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF THE CLAIMS

Claims 1-46 have been presented during prosecution of the application under appeal.

Claims 1-44 have been canceled.

Claims 45-46 are pending.

Claims 45-46 are rejected.

Claims 45-46 are appealed.

IV. STATUS OF THE AMENDMENTS

Applicants filed no amendments subsequent to final rejection.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The current invention includes within its scope a method of providing a material in a site between metal features on a wafer. The acts of that method comprise performing a deposition of the material over the wafer in the site; and etching that material in the same general site used to perform the deposition; wherein the act of etching further comprises etching generally simultaneously with performing the deposition. (Original Specification at p. 5, ln. 17- p. 6, ln. 14; FIG. 2; Replacement Specification at ¶[0013]-[0018].) In a narrower embodiment of this type, the act of performing a deposition further comprises depositing a polymer on the wafer. (Original Specification at p. 5, ln. 17-18; Replacement Specification at ¶[0015]; FIG. 2.)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 45-46 stand rejected under 35 U.S.C. §112 ¶1, as allegedly failing to comply with the written description requirement.

Claims 45-46 stand rejected under 35 U.S.C. §102 as allegedly being anticipated by U.S. Patent No. 4,919,748.

VII. ARGUMENT

Applicants address each ground of rejection separately below.

A. Rejection of claims under §112 ¶1

The Examiner rejected claims 45-46 under §112 ¶1, arguing that the limitation concerning “etching generally simultaneously with performing said deposition” lacks support in the Specification. The Board is alerted that Applicants cited support in the Specification for this limitation in response to the Examiner’s last §112 rejection; and the Examiner’s subsequent withdrawal of that §112 rejection indicates sufficient support.

Specifically, the Examiner argued a §112 ¶2 rejection in the Office Action dated 3/28/03, concluding that claims 45-46 were indefinite based on the phrase “generally simultaneously.”

(Office Action dated 3/28/03 at p. 3.) In the Response to that Office Action, Applicants cited support in the Specification and argued in favor of the claims' definiteness. The next Office Action, mailed almost *one year* later, contains no §112 rejection. (Office Action dated 6/23/04.)

More specifically, Applicants contended that both the figures and text of the Specification support the term "generally simultaneously" with respect to the elected species represented in FIGS. 1-4. (Response to the 3/28/03 Office Action at p. 1-2.) Applicants referred the Examiner to page 5, line 17 to page 6, line 14 of the Specification (as well as FIG. 2) for non-limiting support. That excerpt of the Specification discloses forming a material within an opening and over the surface of a wafer. The excerpt presents an exemplary set of parameters for achieving this and concludes by indicating that these settings cause the material formed on the surface to be *thinner* than the material formed within the opening. Applicants contended that one of ordinary skill in the art would understand that excerpt to indicate that etching is occurring simultaneously with deposition, wherein the etching is affecting the material exposed on the surface more so than the material protected within the opening.

Applicants further argued that such an interpretation of this text not only refuted the §112 rejection but provided other benefits as well. (Response to the 3/28/03 Office Action at p. 2-3.) For example, that interpretation provides continuity and compatibility with the second species of the invention. The second species forms the material in the opening without forming the material on the wafer surface. (Specification at p. 7, ln. 16-p. 8, ln. 9; FIGS 5-6.) The Specification expressly compares the second species to the currently elected first species. (*Id.* at p. 7, ln. 22-p. 8, ln. 1.) In doing so, the Specification states that the second species has a lower deposition rate than the elected first species. (*Id.*) The implication is that the etch rate is present in both species; but in the second species, the etch rate is sufficient to overcome the deposition on the surface. It is further implied that, in the elected species, the etch rate, while present, does not completely overcome the deposition. Rather, the elected species' etch rate merely thins the material deposited on the surface.

Applicants also pointed out another benefit of Applicants' proposed interpretation: it supports efficient prosecution of claims. (Response to the 3/28/03 Office Action at p. 3.) Specifically, such an interpretation saves the Patent and Trademark Office from having to engage prosecution on a continuation that Applicants would have to file in order to pursue the exact

same claims, relying on the paragraphs following the ones relied upon in this application. Accordingly, Applicants requested that the Examiner withdraw the §112 rejection.

The Examiner did, in fact, withdraw the §112 rejection. (Office Action dated 6/23/04.) Nevertheless, the Examiner raised a §112 issue yet again in the latest Office Action. (Office Action dated 10/20/04 at p. 2.) Applicants speculate that the attempted reintroduction of §112 issues may be a result of the almost one-year delay in addressing Applicants' last response, during which time the Patent Office lost the application (as admitted by Supervisory Examiner Smith during a phone conversation on 5/26/04). Regardless of why the Examiner has raised §112 issues once again, Applicants contend the Specification excerpts cited above support the written description requirement relevant to the current §112 rejection as they support definiteness requirement relevant to the previous §112 rejection.

Applicants also note that (1) the language at issue has been present in claims 45-46 for over five years -- since the application filing date of 12/22/99; and (2) the Examiner raised §112 ¶1 written description issues almost five years ago in the first Office Action dated 6/6/00 (p. 2) without addressing this limitation. As a result, the Examiner's attempt to reintroduce §112 ¶1 issues this late in prosecution suggests the Examiner is conducting piecemeal examination that is discouraged by the Patent Office. (MPEP §707.07(g) (stating piecemeal examination should be avoided as much as possible; and the Examiner ordinarily should reject each claim on all valid grounds available).) Such provides policy reasons in addition to the cited support in the Specification that warrant the Board's reversal of the Examiner and withdrawal the current §112 rejections.

B. Rejection of claims under §102

The Examiner rejected claims 45-46 as being anticipated by U.S. Pat. No. 4,919,748 by Bredbenner. Applicants contend that the claims contain limitations that Bredbenner fails to address. For example, claim 45 requires etching a material generally simultaneously with performing a deposition *of that material*. Dependent claim 46 incorporates this limitation. The Examiner's current rejection relies on Bredbenner's etching a metal and performing a deposition *of a completely different material* – polymer. (Office Action dated 10/20/04 at p. 2.) Thus, the

plain language of the rejection fails to address the plain language of the claim limitation, thereby demonstrating that the Examiner has failed to satisfy the burden for rejection.

Significantly, the previous Office Action contained the Examiner's attempt to argue that Bredbenner discloses etching and depositing the same material simultaneously. (Office Action dated 6/23/04 at p. 2.) Applicants refuted that argument. (Response to the 6/23/04 Office Action at p. 3-4.) The latest Office Action contains the Examiner's announcement that Applicants' refutation was unpersuasive. (Office Action dated 10/20/04 at p. 2, ¶5.) However, the Examiner's need to change to a new argument belies that announcement, represents an implicit admission that Bredbenner fails to anticipate the claims, and further proves the Examiner has failed to satisfy the burden for rejection.

The Examiner attempted to justify the latest rejection by interpreting the relevant limitation in a manner that contradicts its plain language. Specifically, the Examiner interpreted the limitation involving etching a material generally simultaneously with performing a deposition *of that material* to mean simultaneously etching and depositing *different materials*. (Office Action dated 10/20/04 at p. 2, ¶5.) The Examiner attempted to cite an excerpt from the Specification for support. (*Id.* (citing page 8 of the Original Specification).)

First, Applicants contend the direct contradiction between the plain language of the limitation and the plain language of the Examiner's interpretation demonstrates the untenable nature of the Examiner's interpretation.

Second, Applicants alert the Board that the Examiner has attempted this argument and cited this Specification excerpt before; Applicants have refuted the Examiner's argument before; and the Examiner has ultimately acknowledged the refutation before. Specifically, the Examiner relied on this excerpt from the Specification and substantially the same argument in the Office Action dated 8/12/02 (p.2 (attempting to support a §112 rejection)). Applicants subsequently pointed out that the portion of the Specification relied upon by the Examiner concerns a third species illustrated in FIGS. 7-8, whereas the current application is a divisional application electing the first species, disclosed in FIGS. 1-4. (*See* Appeal Brief submitted 1/20/03 at p. 3.) Applicants argued that the Examiner's reliance on text that addresses a non-elected species deemed to be patently distinct by the Patent Office was insufficient for meeting the Examiner's burden for rejecting the claims. (*Id.*) The Examiner subsequently attempted an alternative argument (*see* Office Action dated 3/28/03 at p. 2-3) but ultimately withdrew it (*see* Office

Action dated 6/23/04 at p. 2-3). Applicants again speculate that the attempted reintroduction of this argument may be a result of the passing of years since the Examiner first raised the argument, during which the Patent Office lost the application. Regardless of why the Examiner attempted to revive this argument, Applicants contend consistency with the Patent Office's previous position, in addition to the reasons presented above and previously during prosecution, warrant withdrawal of this argument once again.

Third, Applicants have cited above (and previously during prosecution) the relevant excerpts in the Specification that support the plain language of the relevant limitation -- Original Specification at p. 5, ln. 17- p. 6, ln. 14; FIG. 2. Applicants submit that the Examiner's citation of another excerpt does not eliminate such support, nor does it warrant the tortured claim interpretation offered by the Examiner.

Thus, the Examiner's attempt to justify a claim interpretation that contradicts the limitations' plain language is untenable. In responding to the Examiner's reasoning, Applicants should not be understood to be narrowing the claims' scope beyond the limitations expressed in claim 45 (and limitations expressed and incorporated by reference in dependent claim 46). As a non-limiting example, Applicants note the Examiner's attempt to focus on etching one material generally simultaneously with performing a deposition of another material. The claims may include within their scope embodiments involving such acts so long as there is also an occurrence wherein etching a material occurs generally simultaneously with performing a deposition of that material. Such additional acts highlighted by the Examiner are not required under the claimed invention, however.

Conclusion

The excerpts cited above by Applicants, which were also cited earlier during prosecution and acknowledged by the Examiner, reasonably convey to one of ordinary skill in the art that Applicants had possession of the claimed invention at the time the application was filed, thereby satisfying §112 ¶1.

Further, the Examiner's attempted novelty rejection does not address the claim limitations and relies on a claim interpretation that directly contradicts the plain language of such limitations, as supported (but not limited) by the Specification. The Examiner acknowledged the

untenable nature of such an interpretation earlier in prosecution, thereby demonstrating a failure to meet the burden for a §102 rejection.

Accordingly, Applicants request the Board reverse the Examiner and withdraw the pending rejections.

Respectfully submitted,

A handwritten signature in black ink that reads "Charles Brantley". The signature is written in a cursive style with a prominent horizontal line across the middle of the name.

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Claims Appendix

45. A method of providing a material in a site between metal features on a wafer, comprising:
- performing a deposition of said material over said wafer in said site; and
 - etching said material in the same general site used to perform said deposition, wherein
said step of etching further comprises etching generally simultaneously with
performing said deposition.
46. The method in claim 45, wherein said step of performing a deposition further comprises depositing a polymer on said wafer.



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Fees pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).

FEE TRANSMITTAL for FY 2005

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 500

Complete if Known

| | |
|----------------------|-------------------|
| Application Number | 09/471,460 |
| Filing Date | December 22, 1999 |
| First Named Inventor | Figura et al. |
| Examiner Name | Calvin Lee |
| Art Unit | 2825 |
| Attorney Docket No. | 94-0280.03 |

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify) : _____

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For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

☐ Charge any additional fee(s) or underpayments of fee(s) ☒ Credit any overpayments

Under 37 CFR 1.16 and 1.17

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FEE CALCULATION

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

| Application Type | FILING FEES | | SEARCH FEES | | EXAMINATION FEES | | Fees Paid (\$) |
|------------------|-------------|-----------------------|-------------|-----------------------|------------------|-----------------------|----------------|
| | Fee (\$) | Small Entity Fee (\$) | Fee (\$) | Small Entity Fee (\$) | Fee (\$) | Small Entity Fee (\$) | |
| Utility | 300 | 150 | 500 | 250 | 200 | 100 | _____ |
| Design | 200 | 100 | 100 | 50 | 130 | 65 | _____ |
| Plant | 200 | 100 | 300 | 150 | 160 | 80 | _____ |
| Reissue | 300 | 150 | 500 | 250 | 600 | 300 | _____ |
| Provisional | 200 | 100 | 0 | 0 | 0 | 0 | _____ |

2. EXCESS CLAIM FEES

Fee Description

Each claim over 20 (including Reissues)

Small Entity
Fee (\$)

Each independent claim over 3 (including Reissues)

Fee (\$)

Multiple dependent claims

360 180

Total Claims

Extra Claims

Fee (\$)

Fee Paid (\$)

2 -20 or HP= 0 x 50 = 0

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims

Extra Claims

Fee (\$)

Fee Paid (\$)

1 - 3 or HP= 0 x 200 = 0

HP = highest number of independent claims paid for, if greater than 3.

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

| Total Sheets | Extra Sheets | Number of each additional 50 or fraction thereof | Fee (\$) | Fee Paid (\$) |
|--------------|---------------|--|----------|---------------|
| _____ | - 100 = _____ | / 50 = _____ (round up to a whole number) x | | = _____ |

4. OTHER FEE(S)

Non-English Specification, \$130 fee (no small entity discount)

Other (e.g., late filing surcharge): Appeal Brief

Fees Paid (\$)

500

SUBMITTED BY

| | | | | | |
|-------------------|-------------------------|--------------------------------------|---------|-----------|--------------|
| Signature | <u>Charles Brantley</u> | Registration No. (Attorney/Agent) | 38,086 | Telephone | 208-368-4557 |
| Name (Print/Type) | Charles Brantley | Date | 3/22/05 | | |

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